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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,397	01/15/2004	Kazuo Nakatani	040008	4943

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EXAMINER

ZEC, FILIP

ART UNIT PAPER NUMBER

3744

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/757,397

Applicant(s)

NAKATANI ET AL.

Examiner

Filip Zec

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2005 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn. However, upon further consideration and an updated search of the prior art, a new grounds of rejection has been applied.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Application 01-239350 to Hiroaki, in view of Japanese Patent Application 11-063694 to Suzuki. In FIG. 1, Hiroaki teaches all elements claimed by the applicant, namely a refrigerator system comprising a compressor (10), a radiator (2), a first throttling device (3), an evaporator (4), all connected in an annular form; and an injection pipe (8), containing a second throttling device (11) in the intermediate portion of said pipe, which injects the refrigerant into said compressor not via a receiver for separating gas and liquid from each other, only when the temperature of the compressor exceeds a predetermined value (lines 7-11 of constitution in the abstract), substantially as claimed with the exception of stating that the refrigerant used is in a supercritical state when re-introduced to the compressor via the injection pipe. Suzuki shows a supercritical refrigerant [0003] can be used in a system and reintroduced to the compressor for

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cooling purposes [0002] to be old in the refrigeration art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Suzuki to modify the system of Hiroaki, by specifying a supercritical refrigerant in order to have a cold refrigerant which is not liquefied, to cool the compressor where the gaseous refrigerant is compressed [0003].

4. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Application 01-239350 to Hiroaki, in view of Japanese Patent Application 11-063694 to Suzuki. In FIG. 5, Hiroaki teaches all elements claimed by the applicant, namely a refrigerator system comprising a compressor (10), a four-way valve (17), an outdoor heat exchanger (2), a first throttling device (3), an indoor heat exchanger (4); a first injection pipe (8a), containing a check valve (18), a second throttling device (11) in the intermediate portion of said pipe and a liquid supercritical refrigerant (high temperature and high pressure coolant; first line of the constitution in the abstract; page 4, col 1, lines 1-7), which is injected into said compressor not via a receiver for separating gas and liquid from each other, only when the temperature of the compressor exceeds a predetermined value (lines 7-11 of constitution in the abstract); and the second injection pipe (8b), containing the gaseous coolant and a check valve (19), which branches off between the first throttling device and an indoor heat exchanger and merges with the first injection pipe (8a), upstream of said second throttling device and not via a receiver for separating gas and liquid from each other, substantially as claimed with the exception of stating that the refrigerant used is a carbon dioxide, in supercritical state when re-introduced to the compressor via the injection pipe. Suzuki shows a carbon dioxide (par [0006] and [0021]) in supercritical state [0003] can be used in a system and reintroduced to the compressor for cooling

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purposes [0002] to be old in the refrigeration art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Suzuki to modify the system of Hiroaki, by specifying a supercritical carbon dioxide as a refrigerant in order to have a cold refrigerant which is not liquefied [0003], to cool the compressor where the gaseous refrigerant from the evaporator is compressed and avoid the use of a receiver in the injection line for separating the supercritical refrigerant to be reintroduced to the compressor.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 4,326,868 to Ozu, Masao et al. teaches a refrigeration system utilizing a gaseous refrigerant bypass.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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~~7~~ Any inquiry concerning this communication or earlier communications from the examiner should be directed to Filip Zec whose telephone number is (571) 272-4815. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on (571) 272-4808. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Filip Zec
Examiner
Art Unit 3744


CHERYL TYLER
SUPERVISORY PATENT EXAMINER

FZ